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Hungarian Military Mapping Abroad 1919–1990

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The Hungarian military cartography scarcely mapped foreign areas until World War II. The 1:50 000 survey of the areas occupied temporarily by Hungarian soldiers in the Soviet Union in 1941–1942 was an interesting event. The transformation of Hungary into a Soviet-type system was practically completed by 1950. Being part of the Warsaw Pact, the socialist countries systematically produced maps of the areas of NATO countries: 1:100 000 and 1:200 000 maps (and even smaller scale sheets of larger areas) were made. The topographic maps were completed with many city plans at larger scales. This type of city maps became a special product of Hungary: the Hungarians prepared maps of numerous cities lying outside the mapped area. The Hungarian army was thrown into open combat only once in the Cold War era when it took part in the invasion of Czechoslovakia in 1968. This event also has its interest for cartography historians.

KEYWORDS
topographic maps; military mapping; cold war

The independent Hungarian military cartography

After the Austro–Hungarian Compromise of 1867, the Hungarian Kingdom became only partly independent, because the diplomatic and military affairs remained common. Hungary was allowed to establish its own civil cartography (cadastral maps, school maps, city maps, tourist maps etc.), but the topographic mapping was under central (Austrian) jurisdiction (Tihany, 1969).

The idea of independent Hungarian military mapping was born during World War I. The preparations started in November 1918, when the military leadership commissioned Colonel Lajos Hajts, professor of the Ludovika Military Academy, with the planning of the organizational frame and structure of the Hungarian State Cartography. Following the order of Colonel Hajts, the Hungarian military and civil cartographers prepared a memorandum suggesting a civil organization which would have been temporarily under the supervision of the Ministry of Defence. The idea was rejected by the State Department, and the independent Hungarian Military Mapping Group was established on 4 February in 1919 (some sources give 17 January, which is the date of the decree) (Buga, in press).

The structure of the Group was based on the Austrian example (Militärgeographisches Institut). The name was changed to Royal Hungarian Military Mapping Institute in the spring of 1921 and was renamed again after a few months to Hungarian (Royal) State Mapping Institute. The activities of the Institute were controlled by the Military Committee till 1927. In 1938, the name was changed again, this time to Military Mapping Institute (Jankó, 2007).

The Institute started a new 1:25 000 scale survey in 1927, which used air photographs to comply with the different characteristics of the terrain types. Altogether 86 sheets were published and additional 17 sheets were field-worked before World War II. As a result, a little bit less than 50% of the actual area was re-surveyed by 1940, and these new map sheets were published (Balla and Hrenkó, 1991).

The political situation in Hungary between the two World Wars

Hungary's signing of the Treaty of Trianon in 1920 ratified the country's dismemberment, limited the size of its armed forces, and required reparations payments. The territorial provisions of the treaty, which ensured continued discord between Hungary and its neighbours, required Hungary to surrender more than two-thirds of its pre-war lands. Romania acquired the east of Hungary, including Transylvania; Yugoslavia gained Croatia, Slavonia, and Vojvodina; Upper Hungary became a part of Czechoslovakia as Slovakia; and Austria also acquired a long strip of land of the pre-war Hungarian territory; even Poland received some northern settlements.

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Hungary lost about 60% of its pre-war population, and about one-third of the 10 million ethnic Hungarians found themselves outside the diminished homeland.

The Kingdom of Hungary used its relationship with Germany to get rid of the consequences of the Treaty of Trianon. In 1938, Hungary openly repudiated the treaty's restrictions on its armed forces. With German help, Hungary extended its territory four times (Vienna Awards in 1938 and 1940) and doubled in size from 1938 to 1941. Hungary regained parts of southern Slovakia in 1938, Carpatho-Ukraine in 1939, northern Transylvania in 1940, and parts of Vojvodina in 1941. Although World War II had already started in 1939, the Hungarian Armed Forces were not directly involved in actions till 1941.

When Hungary entered World War II as part of the Axis in 1941, it was not through some desire to be part of Hitler's vision of a new Europe, but also for its very own regional and territorial motives. Hungary's decision to join the German invasion of the Soviet Union was uncertain in 1941: the politicians were split, and the Soviets had offered to support Hungary's territorial claims against Romania in exchange for neutrality. Finally, Hungary declared war on the Soviet Union on 27 June 1941 (Romsics, 1999).

The Carpathian Army Group was formed from border and mountain units stationed in the Carpathian Mountains facing the Soviet frontier. In December 1941, the British declared war on Hungary, ending hopes that Hungary could limit its involvement in the war. The governor decided to reduce Hungary's involvement in further operations in the Soviet Union to the minimum possible. After several discussions and conflicts between Berlin and Budapest, the decision was that the Hungarians would contribute to the German success by sending the Second Hungarian Army to the Eastern Front (Cornelius, 2011).

Hungarian maps of the Don River bend

The Second Hungarian Army occupied its position along a 200 km defence line on the west bank of the Don River by end August 1942. The commanders marked the front line of the troops at 2–6 km from the river. The Soviet troops built their positions in the bends of the river. The Hungarians were unable to destroy these posts.

The maps for the Hungarian troops were provided by the German army. The most detailed map was the copy of the 1:100 000 Soviet (Russian) military topographic map looted by the Germans and completed with German names. This map, however, was not accurate enough for the correct representation of positions for the artillery and for use in military actions in a small area. Therefore, they decided to produce more reliable and detailed maps (1:50 000, three-colour military topographic maps) in a joint effort of several organizations. The region was covered by 16 sheets; they were compiled to show the operation area and the artillery range of the Hungarian army (Balla and Hrenkó, 1991).

The area was surveyed by German mapping divisions, while the aerial photographs were taken by the Royal Hungarian aerial reconnaissance division. The interpretation of the photographs, drawings, etc. was carried out by the Military Mapping Institute in Budapest. The maps were to be printed by the map supply division of the army. The maps were probably never printed, because the latest date on the worksheets is 25 January 1943, and the Soviet army broke through the Hungarian positions on 12–14 January (Buga, in press).

The maps of the Eastern Front were produced in Gauss–Krüger projection. Each 1:50 000 map sheet covered half of the area of the 1:100 000 map sheet. The title of the maps was derived from the 1:100 000 scale map sheets by adding S (South) or N (North) letters. That the mappers worked on 16 map sheets simultaneously is clear from the worksheets, where they indicated *matched* or *out of scope* on each side of the sheets. Those areas where the field surveyors were able to guarantee the joins are shown in a darker colour on the overview maps, while those parts where the maps relied only on the aerial photographs and looted maps are shown in a lighter colour (Figure 1).

Fifteen worksheets from the 16 have been in the Map Collection of the Ministry of Defence, Institute and Museum of Military History, where the M-37-44-N Sswoboda sheet was digitally reproduced in colour (Figure 2). All the details outside the map frame are bilingual (German and Hungarian), and in addition to the common topographic comments, it gives the explanation for the Cyrillic abbreviations on the map. The worksheets were prepared in the Military Mapping Institute, while the printing was done on site by the cartographic squadron of the German Army. Printing the maps at the front line was planned to save time and expenses of transporting the maps. Delivering the worksheets was easy using the regular air courier service between the troops (Buga, in press).

Political changes after World War II: the formation of two Blocs

The transformation of Hungary into a Soviet-type system was practically completed by 1950. This also meant that the topographic maps were produced by the military according to Soviet legend and execution. By this time, the relationship between the Soviet Union (and Hungary) and its Second World War allies (Western countries) had deteriorated. In 1946, Winston Churchill raised the idea of the United States of Europe, but in

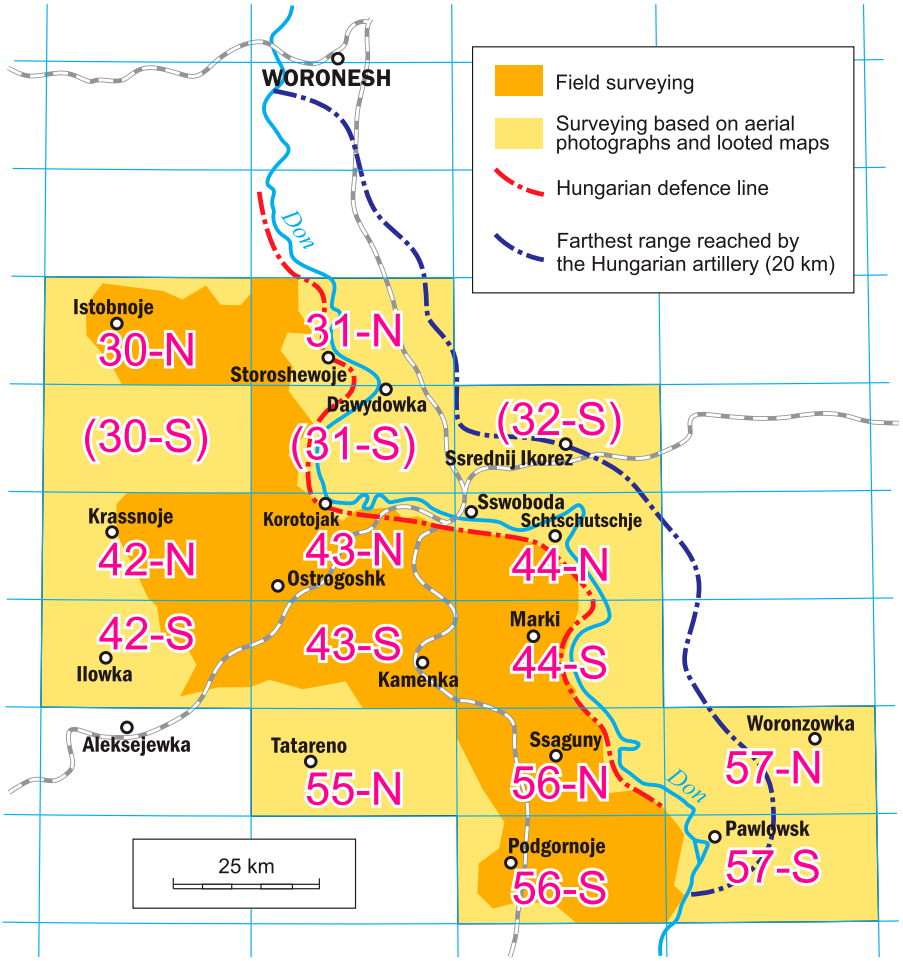

Figure 1. The index sheet of the Don River bend area. (Based on a figure originally complied by Ábel Hegedüs, Institute and Museum of Military History, Budapest.)

the same year he was the first who called the borderline of the two Blocs an 'Iron Curtain', and a four-decade era of the Cold War began (Churchill, 1946).

The co-operation of the socialist[1] countries was formalized in two main organizations, which were initiated or rather forced and definitely directed by the Soviet Union:

- The Council for Mutual Economic Assistance (Comecon) was formed in 1949. This was the regional economic/trade organization for the socialist countries of Central and Eastern Europe. The establishment of Comecon was one of the measures taken by the Soviet Union in order to counteract the effects of the Marshall Plan and to consolidate the Soviet influence in Central and Eastern Europe.
- The Warsaw Pact was created in reaction to the integration of West Germany into NATO in 1955, but it is also considered to have been motivated by Soviet desires to maintain control over the military forces in Central and Eastern Europe, although the whole political and military structure of these countries had already been sovietized by this time. Formally the Warsaw Pact was a Treaty of Friendship, Co-operation, and Mutual Assistance, but the Soviet leadership was evident just as in the case of Comecon (Borhi, 2004).

Developments in Hungarian military mapping after World War II

The site of the Military Mapping Institute in Budapest was not severely damaged during the siege of the capital in the winter 1944/1945 (the Soviet troops completed the liberation/occupation of Budapest on 13 February 1945). However, due to the war situation, the organization of the institute resolved and its units had already been moved to different places before the siege. Nearly all of the units suffered serious damage (both personnel and materials) and some of them were dissolved. Although the new commander of the institute was entrusted by the Provisional National Government on 23 March 1945, the ambiguous months of the post-war times ended only on 1 October 1946, when the institute was re-established (Balla and Hrenkó, 1991).

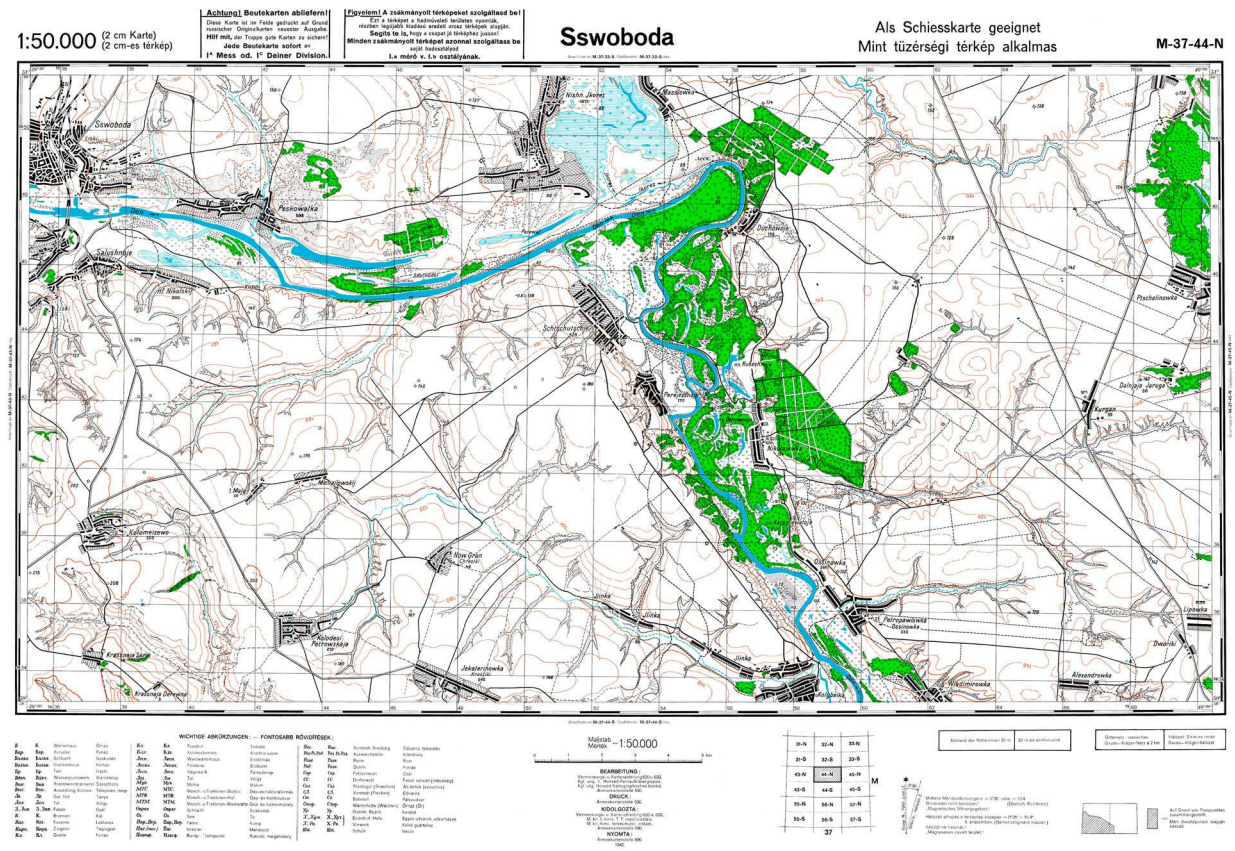

Figure 2. The digitally reproduced M-37-44-N Sswoboda sheet (1:50 000). (By courtesy of Ábel Hegedüs, Institute and Museum of Military History, Budapest.)

The influence of Soviet Union continuously increased from this time on, and the following tasks were dictated to the Hungarian military mapping:

- The modernization of military topographic maps after 1950 based on the Soviet regulations: Gauss–Krüger projection, sheet system, symbology.
- Changing the staff of the institute: guiding the cadres of worker-peasant origin towards cartography.
- Mapping the area of Yugoslavia at 1:50 000 scale. The international situation was intensifying due to the escalation of the Cold War and due to the particularist policy of socialist Yugoslavia; the military preparation was an open secret in the general consciousness. The Hungarian communist party leader (Mátyás Rákosi) called the Yugoslavian leader (Josip Broz Tito) the 'chained dog of imperialism' (Buga, in press).

The accelerated survey of Hungary and the mapping of Yugoslavia

In this military preparation, the Military Mapping Institute, renamed Mapping Institute of the Ministry of Defence in 1952, had an outstanding role in supporting the military troops with topographic maps. This was a difficult task because they did not even have updated topographic maps of the area of Hungary. As for Yugoslavia, Hungary had no maps of the country at all. As the time factor was extremely important, such tasks had to be tackled at any cost. The military commanders ordered the accelerated survey of Hungary at 1:25 000 and also started the preparation of the topographic maps of Yugoslavia as of 1950. Maps of both surveys were classified.[2]

The implementation of the Gauss–Krüger projection and coordinate system was not free of problems in Hungary. Although the military cartographers knew this global projection system (the institute had a Scientific Group), the Hungarian experts were not aware of the Soviet version of the Gauss–Krüger system (they used what was known as the German Gauss–Krüger system). The Soviets changed not only the datum from Bessel's ellipsoid to Krassovsky's, they changed other parameters such as the orientation of the ellipsoid too. Even there was a Soviet advisor in the institute since 1950, who only communicated with the commander of the institute and did not share information with the Hungarians cartographers and surveyors.

In the third year of the accelerated survey, the Soviet advisor checked the newly produced sheets and tried to fit them with the Soviet sheets along the Hungarian–Soviet Union border. There was a 600-metre error and the axes of the coordinate system were not parallel, which was due to the different ellipsoid sizes. Another source of

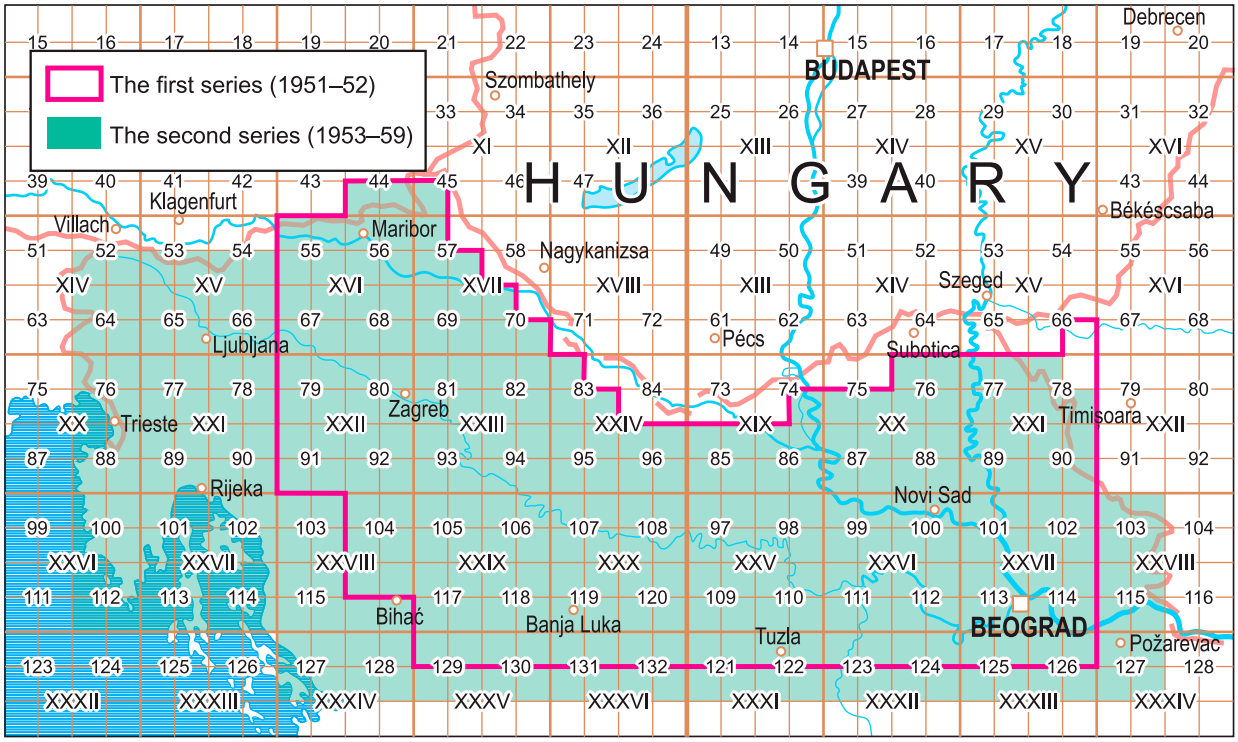

Figure 3. Index map of the Yugoslavian 1:50 000 scale map sheets. (Based on a figure originally complied by Ábel Hegedüs, Institute and Museum of Military History, Budapest.)

the errors was the inhomogeneity of the Hungarian triangulation system. As the sheets surveyed in 1950 and in 1951 were already printed, only the maps of the 1952 survey (NE part of Hungary) were re-edited and re-drawn. There was a discontinuity along the 20° meridian and the 46° 40′ parallel line. Altogether 1157 sheets were produced (Buga, in press).

For Yugoslavia, first, the maps of an approximately 150-km band along the Hungarian border were created at 1:50 000 scale. Later, the area to be mapped was extended (Figure 3). The 1:50 000 base maps were provided by the Soviet Union (prepared in 1948–1951, the survey data referred to 1942–1944). Each sheet was printed in 10,000 copies. A military geographic description of Yugoslavia was also prepared in 1954. This was a mini thematic atlas with 15 maps (Figure 4).

The systematic mapping of Austrian and Italian territories

However, the accelerated survey created homogeneous-looking map sheets, the accuracy of this survey was not homogenous enough due to the time constrains. When Stalin died in 1953, the political situation in the Soviet Union and most of the Soviet Bloc countries slightly changed. This environment allowed the start of a more precise, modern military topographic survey based on stereophotogrammetry: the technical conditions were given, there were enough skilled and educated surveyors and cartographers. The revision of the national triangulation network was also completed. A new survey at 1:25 000 scale, initiated by the group of the Geodetic Services of the Socialist Countries, was completed between 1953 and 1959. Smaller scale maps were also derived. The Hungarian revolution in 1956 slightly slowed down the survey (some cartographers emigrated to Western countries), but the institute quickly recovered. After the completion of this 1:25 000 scale survey, the military strategy has changed, and the importance of the 1:50 000 scale maps increased. Therefore, some of the survey updates concentrated only on the 1:50 000 scale. (Up to now, the 1:25 000 scale is the largest scale of the military topographic maps in Hungary.) (Davies and Kent, 2017; Parry and Perkins, 2000).

The time of the completion of this survey, the co-operation between the military mapping institutes of the socialist countries were established in the frame of the Warsaw Pact. The Cold War era pushed both Blocs to collect information on the enemy areas, so it was a quite natural process to map the foreign areas which were identified as the attack direction of the Hungarian Army, that is Northern Italy and Austria (Figure 5).

The official terminology of surveying foreign areas was the harmless ‘coalitional division of labour’ or ‘peripheral mapping’ (the code-name of the mapping project was Platán in Hungary in the 1980s). The largest scale of the survey was 1:50 000, but smaller scale maps were also derived (1:100 000, 1:200 000, 1:500 000, 1:1 million scales). The full

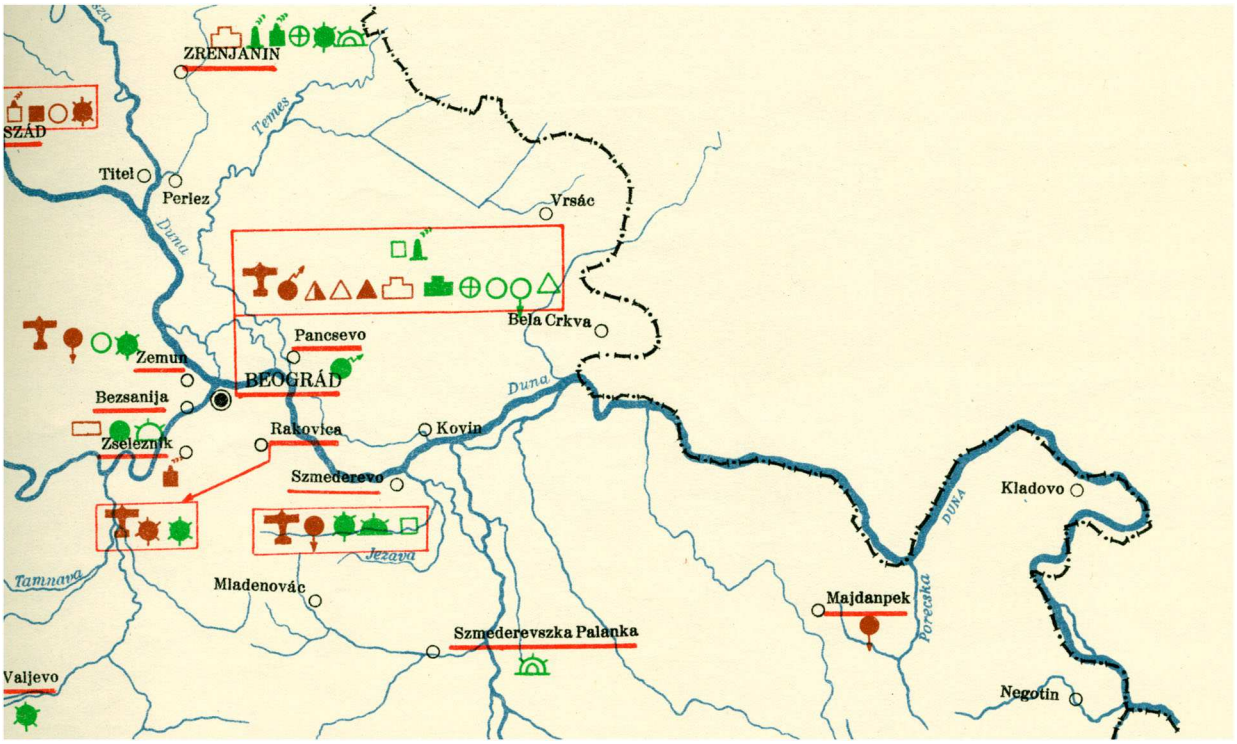

Figure 4. Map of the industry of Yugoslavia. (By courtesy of the Institute and Museum of Military History, Budapest.)

extent of the Warsaw Pact mapping project will probably never be completely known, but it is safe to say that almost the entire land surface of the globe was captured on topographic maps at 1:1 000 000 and 1:500 000 (mostly produced by Soviet military cartographers). Large areas of the Americas, Europe and Asia were mapped at 1:200 000 and 1:100 000, whilst maps at 1:50 000 covered the neighbouring countries and the core areas of NATO countries. This was the age of mutual mistrust and suspicion, which explains why intelligence services had an important role in collecting map information on each other's countries. These unique maps were printed in limited number

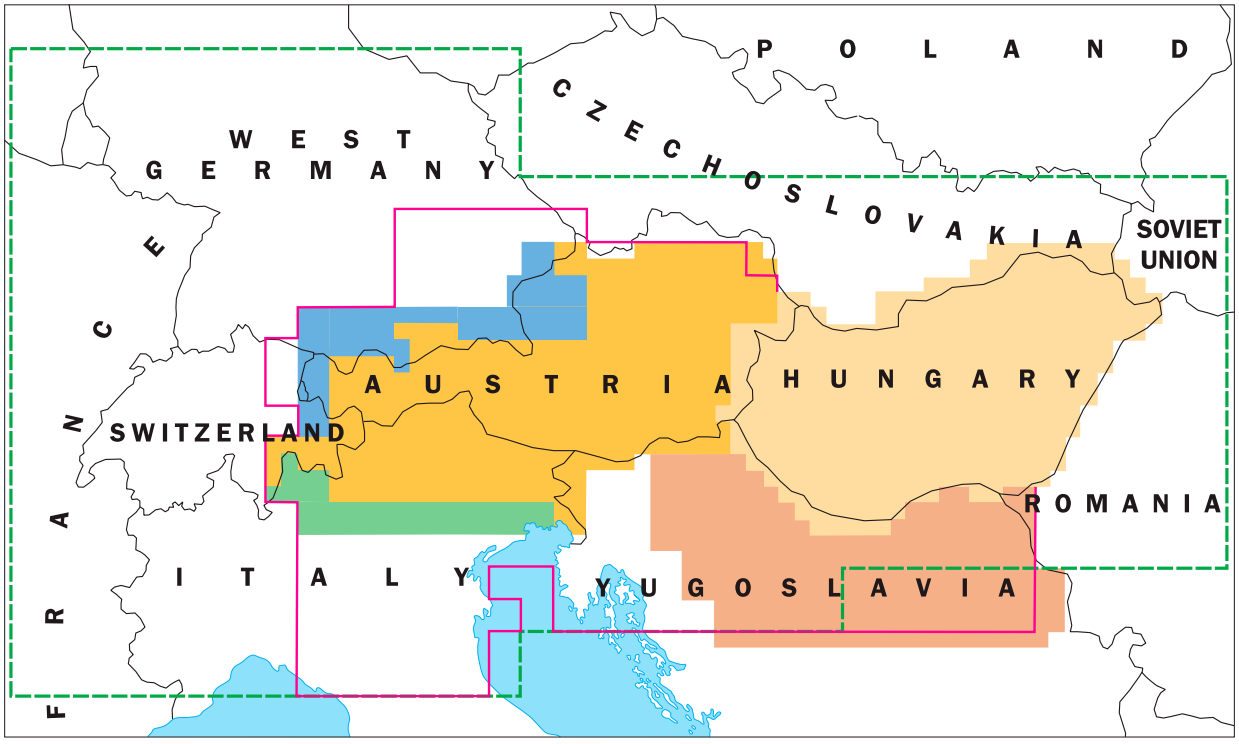

Figure 5. Index sheet of foreign areas mapped by Hungary. The southwestern sheets were made after Soviet maps; the northwestern sheets were made in co-operation with Czechoslovakia. The thinner continuous line indicates the 1:100 000 scale sheets; the dashed line shows the area of 1:200 000 scale sheets made by Warsaw Pact countries. (Based on a figure originally compiled by Ábel Hegedüs, Institute and Museum of Military History, Budapest.)

of copies and only few military people had free access to these sheets. (Naturally, NATO has also mapped the territory of a potential enemy. However, during the Cold War, the mapping of the socialist countries by NATO was far more selective; e.g. only those cities were mapped that had military significance.) (Collier *et al.*, 1996).

The maps were not only published once for the military: they were updated using commercial map products, nautical charts, gazetteers, timetables, intelligence information, and probably Soviet satellite images. Several thousand copies were printed. The worksheets of the map sheets produced by the Hungarians were handed over to the Soviet cartographers, and the sheets were re-printed by them with Cyrillic text and script. The 1:500 000 and 1:1 000 000 scale maps were produced by the Soviet military cartographers and the worksheets were given to the military mapping services of the Warsaw Pact countries allowing them to prepare their translated versions.

The work plan of the mapping was centrally compiled by staff of the Command of Allied Armed Forces. They defined the area of the Hungarian mapping and the deadlines. These tasks had absolute priority over the national topographic surveys (Buga, in press).

There were also other products such as the list of coordinated sites (secret use), description of operation fields (secret use), military geographic description and atlas, and the map of geodetic data (these 1:100 000 scale maps were produced only in the last decades of the mapping project). One of the most interesting questions is how these maps were made. The situation of Hungary was a little bit easier, because the foreign areas mapped by the Hungarian Military Mapping Institute were mapped previously by the military survey of Austria–Hungary (most useful were the sheets from the Third Military Survey done in 1869–1887), which provided at least accurate geographic coordinates. Austria was a neutral country in the Cold War era; since the allied (including Soviet) troops left the country in 1955, it was easy to acquire Austrian tourist, topographic, and city maps. Northern Italy was also covered by detailed tourist and hiking maps (Figure 6).

The survey of foreign areas was officially abandoned only in 1990, by which time the intensity of collecting information and compilation of maps slowed down (Buga, in press).

The role of Hungarian civil cartography

To make the purchase of these foreign maps less dubious, the military cartography asked (or ordered) Cartographia, the Hungarian state cartographic company founded in 1954, to buy open access maps for them. Although the Hungarian currency was not convertible, Cartographia had a particular right of exporting their products. The company was allowed to keep the Western currencies and purchase publications from abroad such as Austria and Italy. It is worth noting that the head of the Hungarian civil cartography at that time was Sándor (Alexander) Radó, who had enough knowledge on intelligence. One of the early and most successful book products of Cartographia was the International Almanac published in 1959. This was an international reference book presenting all countries and global organizations in Hungarian language. The almanac had several editions and was also published in German in 1962 (Heffernan and Győri, 2014).

Cartographia was also famous for its periodical, Cartactual. This journal was started in 1965 to provide international mapping agencies with fresh map information. It was published four times a year at the beginning, the editor-in-chief being Sándor Radó. Cartactual soon became a bi-monthly periodical, and was gradually extended in size and modernized in execution (colours, languages, bibliographic information supplement). Cartactual was collecting map information on new constructions (highways, reservoirs, railways) as well as various geographic changes from the world. These maps were edited for the periodical distributed (on subscription) to map publishers, libraries, university departments or interested people all over the world.

In 1971, Cartactual was completed with an extra service, a textual supplement, Cartinform, gradually extending to a brochure of 20–24 pages. Its aim was to present detailed bibliographic information on atlases, maps and books on geography and cartography. This innovation offered an important secondary use of the journal: the editors received lots of fresh maps and information free of charge, which was forwarded to Cartographia and probably also to military cartographers.

Cartactual gained broad international reputation among geographers, particularly cartographers (Zentai, 2015). However, the publication of Cartactual was profitable only until the early 1990s due to the much-depressed salaries in the socialist countries.

City plans

Less-known products of these times were the military city plans of foreign, first of all, NATO countries. Altogether, probably about 1000 cities were mapped all over the World mostly by Soviet military cartographers. Hungarian military cartographers produced more than 60 plans on important Austrian, German, Italian, and Swiss cities.

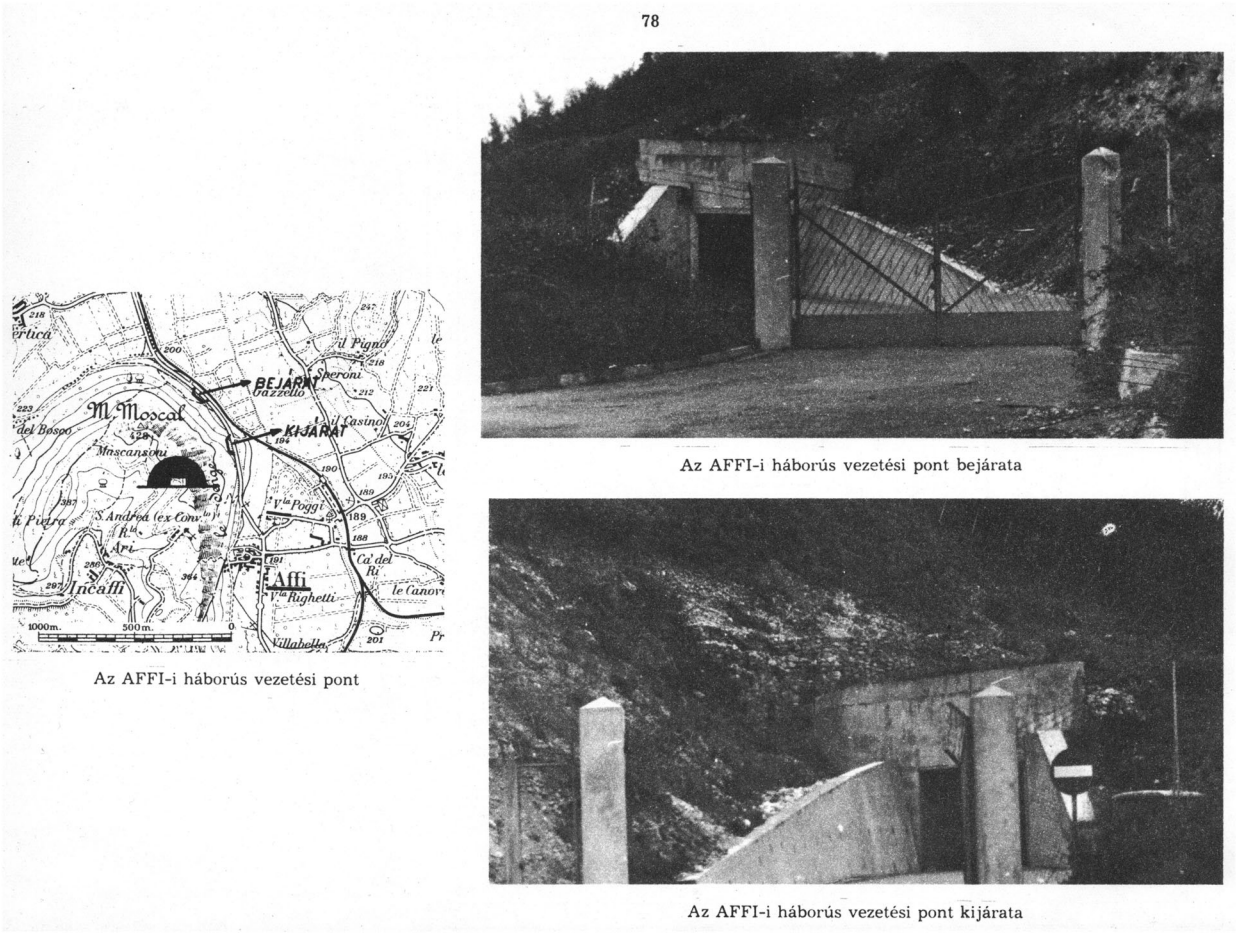

Figure 6. A page of a special atlas on military objects describing the operation fields of North Italy. (By courtesy of the Institute and Museum of Military History, Budapest.)

(An interesting addition is two Yugoslavian cities, Ljubljana and Rijeka, because Yugoslavia was a founding state of the Non-Aligned Movement.) These plans were made after the base of old Soviet Union-published maps, other Soviet documents, local maps purchased via Cartographia, and other intelligence materials. On the back side of the city plans, there was a street index, a descriptive essay, a list of major institutions, and occasionally photos of important objects (Buga, in press) (Figure 7).

These city plans (Table 1) were rectangular in shape and based on the coordinate system of the Gauss–Krüger projection. The sheets themselves varied in size, and they were oriented as portrait or landscape layout to suit the terrain to be covered. Unlike the topographic maps, city plans were individual, specific sheets centred on a particular city, where the legend was not homogeneous and slightly changed in time. The maps were very detailed; however, the concentration on depicting civil rather than military information suggests that they were not intended for use as invasion maps. They were probably treated as necessary tools to control the economic activities of the Western cities after their eventual peaceful conversion to socialism (Davies and Kent, 2017).

Czechoslovakia, 1968

In August 1968, 2000 tanks and 200,000 Soviet and Warsaw Pact soldiers entered Czechoslovakia. Failed negotiations over a programme of political liberalization known as 'Prague Spring' served as the precipitating event. There were several considerations that led to the Soviet authorities' decision to invade Czechoslovakia. First was their fear of the alternative model of democratic socialism (like in Hungary in 1956). Geopolitical calculations at least not to encourage other socialist countries to follow the Czechoslovakian model also played a role (Romsics, 1999).

The Hungarian People's Army was thrown into open combat only once after 1945 when it took part in the invasion of Czechoslovakia in 1968. The final decision of Hungary's participation in this military action was brought by chief party secretary János Kádár only less than a month before. The places where the Hungarian soldiers would be put into action were changed in the meantime by the Soviet generals, the actual commanders. This explains why there were no cartographic preparations at all.

Figure 7. Part of the city plan of Regensburg (West Germany), 1:10 000 (1967). (By courtesy of the Institute and Museum of Military History, Budapest.)

The area of the Warsaw Pact countries was not mapped by the other allied countries, which reasons why there were no available detailed maps. Only the Soviet Union had the whole set of maps, because the local and national worksheets were sent to the Soviet Union, where they produced a Cyrillic script version of all sheets for their own use, because Soviet troops were 'temporarily' stationed in the friendly countries.

The 1:200 000 scale maps of the areas around Hungary were only completed in 1966 (see Figure 5); the troops were provided with these maps. The lack of detailed maps was a recurring complaint in the reports of the Hungarian army. Therefore, the urgent preparation of two 1:100 000 scale sheets was ordered after the invasion. Although the maps were quickly prepared indeed, the Hungarian soldiers returned to Hungary after two months, in late October 1968, before the completion of the maps.

The last decades of the Soviet Bloc and the end of the Cold War era

Hungary remained a member of the Warsaw Pact until its dissolution in 1991. Hungary continued mapping foreign areas and cities as a part of the division of labour within the allied countries in the last two decades of the Pact. Quite until the political transformation of Hungary in the late 1980s, these maps were revised and updated as well as printed and distributed for military use in the Bloc. However, as there were no conflicts in the neighbour countries of Hungary, all these military mapping activities had no particular sense at all.

In these decades, Hungary had two independent though parallel topographic mapping regimes: it happened that the civil and military services produced several map series in the same scale, though independently of each other. The services were supervised by two different ministries with minimal professional cooperation, in which the military part was determinant (Böhme, 1993). These irrational parallel systems were rationalized by the act on mapping only in the mid-1990s. This act divided the responsibility of national surveying according to the basic

Table 1. The list of city plans

City	Country	Scale	Date of printing
Amstetten	Austria	1:10 000	1984
Aschaffenburg	West Germany	1:10 000	1969
Augsburg	West Germany	1:10 000	1966
Baden	Austria	1:10 000	1965
Baden-Baden	West Germany	1:15 000	1969
Bamberg	West Germany	1:10 000	1968
Bayreuth	West Germany	1:10 000	1969
Bologna	Italy	1:15 000	1965
Bolzano	Italy	1:10 000	1965
Bregenz	Austria	1:10 000	1965
Brescia	Italy	1:15 000	1967
Darmstadt	West Germany	1:10 000	1969
Ferrara	Italy	1:10 000	1966
Freiburg	West Germany	1:10 000	1969
Friedrichshafen	West Germany	1:10 000	1966
Genova	Italy	1:15 000	1966
Graz	Austria	1:10 000	1965, 1984
Heidelberg	West Germany	1:10 000	1969
Heilbronn	West Germany	1:10 000	1968
Ingolstadt	West Germany	1:10 000	1965
Innsbruck	Austria	1:10 000	1965
Karlsruhe	West Germany	1:15 000	1968
Klagenfurt	Austria	1:10 000	1985
Kufstein	Austria	1:10 000	1964, 1970
Landsberg	West Germany	1:10 000	1965
Landshut	West Germany	1:10 000	1966
Leoben	Austria	1:25 000	1966
Linz	Austria	1:15 000	1988
Ljubljana	Yugoslavia	1:15 000	1965
Luzern	Switzerland	1:15 000	1965
Mannheim, Ludwigshafen	West Germany	1:15 000	1966
Milano	Italy	1:15 000	1966, 1987
Mödling	Austria	1:10 000	1956
München	West Germany	1:15 000	1965
Nürnberg	West Germany	1:15 000	1964, 1972
Padova	Italy	1:15 000	1965, 1979
Parma	Italy	1:15 000	1966, 1976
Pforzheim	West Germany	1:10 000	1971
Piacenza	Italy	1:15 000	1969
Regensburg	West Germany	1:10 000	1967
Rijeka	Yugoslavia	1:10 000	1965
Rosenheim	West Germany	1:10 000	1965
Salzburg	Austria	1:10 000	1965, 1983
Sankt Gallen	Switzerland	1:10 000	1965
Sankt-Pölten	Austria	1:10 000	1965
Steyr	Austria	1:10 000	1965
Stuttgart	West Germany	1:15 000	1968
Torino	Italy	1:15 000	1966
Trieste	Italy	1:10 000	1965
Tübingen	West Germany	1:10 000	1967
Udine	Italy	1:15 000	1965
Ulm	West Germany	1:10 000	1967
Venezia	Italy	1:10 000	1965
Verona	Italy	1:15 000	1965
Vicenza	Italy	1:10 000	1965
Villach	Austria	1:10 000	1965
Wels	Austria	1:10 000	1965
Wien	Austria	1:10 000	1966
Wiener Neustadt	Austria	1:10 000	1985
Wintherthur	Switzerland	1:10 000	1966
Würzburg	West Germany	1:10 000	1968
Zürich	Switzerland	1:15 000	1966

Note: (László Buga and Ábel Hegedüs compiled the list based on worksheets of the Hungarian Defence Forces Mapping Company. Some plans are still latent in military archives).

scales: state maps at 1:10 000 and larger to be made by the civil mapping authority and smaller scale maps by the military mapping service (Buga, in press).

The study and analysis of these military maps made of foreign areas by Hungary still have to wait for professional cartographic investigation. The authors hope that the 100th anniversary of the establishment of the Hungarian military mapping service (1919) will give a great opportunity to the civilian and military cartographers to explore the background and relevance of these products, which were prepared under difficult domestic and international circumstances. We are convinced that these maps were quality products, which deserve international attention and appreciation. They should be considered as valuable contribution of cartography to the documentation of the history of the Cold War times.

Conclusion

Systematic topographic mapping of foreign (enemy) areas was always a real challenge for the military. During the Cold War era, Hungary had no chance to map the foreign areas, only data collection methods were available. Producing such maps was a waste of money and resources in most cases, but military cartographers had to follow the order. None of the above-mentioned maps were used for terrain navigation in practice. When the political system changed in Hungary (1990) and after the dissolution of the Warsaw Pact (1991), the Hungarian military strategy has changed to a system known as circular defence. For this purpose, the Hungarian Military Mapping Institute had to prepare the missing map sheets of the 1:200 000 and 1:500 000 series. Nowadays, it is much simpler: global on-line map services provide all kinds of information free of charge, though the importance of military topographic mapping has remained.

Notes

1. The Soviet Bloc countries used the term *socialist countries* naming themselves, while the Western terminology was *communist countries*.
2. The topographic maps of Hungary were not classified between the two world wars. However, all topographic maps were classified since these surveys till December 1992, after the political system of the Hungary has changed.

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